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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,913	06/16/2005	Marianne Hammer-Altmann	10191/4139	8406

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EXAMINER

KOSLOW, CAROL M

ART UNIT	PAPER NUMBER
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1755

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08/13/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/539,913	Applicant(s) HAMMER-ALTMANN ET AL.	
	Examiner C. Melissa Koslow	Art Unit 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 9-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/2005</u> . | 6) <input type="checkbox"/> Other: ____ |

WO 02/55450 cited in the information disclosure statement filed 16 June 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

The disclosure is objected to because of the following informalities:

Page 3, lines 30-31 gives niobium (Nb) as an example of a rare earth metal. Niobium is not a rare earth metal. It is noted that page 6 teaches Nd or neodymium doped PZT ceramics and Nd is a rare earth metal. The composition of the piezoelectric ceramic is unclear. The phrases "PZT-based" and "doped" does not clearly define the composition of the ceramic. A PZT can contain rare earth metal as substituents or dopants, such as lead lanthanum zirconate titanates, or it can contain subcomponents that are not part of the PZT perovskite structure, which are also known as dopants in the art. Applicants need to clarify the composition discussed in the specification. The table on page 6 state RB-doping is doping as in WO 02/55450 or U.S. patent 6,773,621. The actual doping composition is not disclosed and WO 02/55450 or U.S. patent 6,773,621 do not define any specific composition as RB-doped. Thus the actual composition tested is unclear. Appropriate correction is required.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The subject matter of claims 18 and 19. While the subject matter for the claims were also in original claim 6, it is nowhere found in the specification. Thus there is no antecedent basis in the specification for the claimed subject matter.

Claim 22 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification teaches on page 4, line 19 using actuators in fuel injector systems. This teaching of intended use does not reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed motor vehicle injection system, which encompasses all motor vehicle injector systems, which is not limited to motor vehicle fuel injector systems. In addition, the phrase "fuel injector systems" does not limited the system to motor vehicle systems only. It include fuel injector systems for furnaces

Claims 16 and 17 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the method of increasing the elongation values of the piezoelectric ceramic of WO 02/55450 or U.S. patent 6,773,621, does not reasonably provide enablement for increasing the elongation values for all PZT compositions doped with combination of elements selected from Ca, La, Nb, Fe and Cu. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

Pages 5 and 6 discuss the elongation values for neodymium doped PZT and the piezoelectric ceramic of WO 02/55450 or U.S. patent 6,773,621, where the actual composition, is not clearly defined. These are the examples are the only showings of elongation values. Such a limited disclosure does not support the breadth of the instant claims. While page 5, lines 28-31

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discusses the effect of the lithium on electrochemical properties, this statement cannot be read to mean it refer to all known electrochemical values of these ceramics.

Claims 9-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 is indefinite as to what are the ions that are mixed. Claim 10 is indefinite since the claimed salts are not lithium in ionic form and claim 9 requires adding ionic lithium to the calcined mixture. Claims 11-15 recite the limitation "PZT compounds" and "the PZT base material". There is insufficient antecedent basis for this limitation in the claims or in claim 9 from which they depend. In addition, it is unclear what is meant by "PZT compounds simply doped using"... "used as the PZT base material". Claim 12 is indefinite since niobium, Nb, is not a rare earth metal. Claims 16-19 refer to sintering, but there is no sintering step in claim 9 nor is there any indication in claim 9 that one should include. Claim 9 teaches producing a low-sintering PZT ceramic material. This phrase indicates the material is not sintered, otherwise it would be a sintered material. Claims 21 and 22 are indefinite since they refer to the ceramic material of claim 1, but claim 1 has been canceled. Thus the ceramic material of these claims are not defined. Finally, claim 22 is indefinite since it is unclear what aspects of a motor vehicle injection system are being claimed; the whole system, a part of the system or only the injectors, themselves and what type of injection systems are encompassed by this phrase.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9-13 are rejected under 35 U.S.C. 102(b) as being anticipated by the article by Cheng et al.

This article teaches producing a Nd doped PZT piezoelectric ceramic by mixing PbO, zirconia, titania and niobium pentaoxide, calcining this mixture and adding 05 wt% lithium carbonate, which corresponds to about 0.095 wt% ionic lithium. The article teaches the claimed process.

Claims 9-13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent 5,993,895.

This reference teaches adding a lithium salt to PLZT powder, which is a lanthanum doped PZT ceramic. While the reference does not teach how the PLZT is produced, it is notoriously well known in the art that this material is conventionally produced by mixing oxides of lead, lanthanum, zirconium and titanium and calcining the mixture. Table 1 teaches adding 0.84 and 1 wt% lithium nitrate, which is 0.084 and 0.1 wt% ionic lithium. The reference teaches the claimed process.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 5,993,895.

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This reference teaches adding a lithium salt to PLZT powder, which is a lanthanum doped PZT ceramic. While the reference does not teach how the PLZT is produced, it is notoriously well known in the art that this material is conventionally produced by mixing oxides of lead, lanthanum, zirconium and titanium and calcining the mixture. The lithium salt can be lithium nitrate or lithium carbonate and the amount is 0.5-10 wt%. If the salt is lithium nitrate, the ionic amount of lithium added is 0.05-1 wt% and if the salt is lithium carbonate, then the amount of ionic lithium is 0.095-1.9 wt%. These ranges overlap the claimed range. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The reference suggest the claimed process.

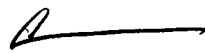
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk
August 10, 2007



C. Melissa Koslow
Primary Examiner
Tech. Center 1700